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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/692,354	10/19/2000	Danny Marvin Neal	AUS-2000-0625-US1	6890

35525 7590 08/06/2004

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EXAMINER

PATEL, ASHOKKUMAR B

ART UNIT	PAPER NUMBER
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2154

DATE MAILED: 08/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/692,354	NEAL ET AL.	
	Examiner	Art Unit	
	Ashok B. Patel	2154	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>6/14, 6/21/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-21 are subject to examination.

Response to Arguments

2. Applicant's arguments filed June 14, 2004 have been fully considered but they are not persuasive for the following reasons:

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the definitions of reliable datagram domain, reliable datagram queue pair context, end-to-end context) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Regarding claims 1, 10 and 19,

- a. As indicated earlier, the reference Krause teaches the reliable datagram services with an underlying end-to-end context of a channel adapter. (Fig.6.) The reference also teaches that the SDRs at the source and SDRs at the destination are created where specific application instances associated with specific SDRs. (storing Reliable datagram domain within reliable datagram and end-to-end context) (page 3, lines 5-15, Fig.4). The reference teaches the examples of protection violations including invalid protection keys, invalid access right request etc. (page 21, lines 30-31 and page 22 lines 1-4). Fig.4 of Krause teaches the creation of the SDRs. The reference teaches that the SDR according to the present invention can be employed to implement

a reliable datagram service according to the present invention which re-uses the same destination SDR resource set per multiple destination AIs. (page 6, lines 5-7).

b. The reference Shah teaches "The present invention is applicable for use with all types of computer networks, I/O hardware adapters and chipsets, including follow-on chip designs which link together end stations such as computers, servers, peripherals, storage devices, and communication devices for data communications. Examples of such computer networks may include a local area network (LAN), a wide area network (WAN), a campus area network (CAN), a metropolitan area network (MAN), a global area network (GAN) and a system area network (SAN), including newly developed computer networks using Next Generation I/O (NGIO), Future I/O (FIO), System I/O and Server Net and those networks including channel-based, switched fabric architecture which may become available as computer technology advances in the Internet age to provide scalable performance. LAN systems may include Ethernet, FDDI (Fiber Distributed Data Interface) Token Ring LAN, Asynchronous Transfer Mode (ATM) LAN, Fiber Channel, and Wireless LAN. However, for the sake of simplicity, discussions will concentrate mainly on a method and system for assigning multiple local identification values (LIDs) to ports in a simple data network having several example nodes (e.g., computers, servers and I/O units) interconnected by corresponding links and switches, although the scope of the present invention is not limited thereto. (col.2, lines 31-55). The reference Shah teaches the virtual interface which can contain work queues formed in pairs including a send queue and a receive queue which is located in channel adapters of any host systems. (col.3, lines 29-47, col.6, lines 22-43). The

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reference also teaches the subnet manager responsible for various functions at the channel adapter including assigning unique addresses to all channel adaptor ports.

Also, the reference teaches partition manager as part of subnet manager assigning storing partition keys to the fabric agent (channel adapter ports)(col.7, lines 23-42).

The reference Shah teaches" As shown in FIG. 2, the data network 10' includes an NGIO fabric 100' (multi-stage switched fabric comprised of a plurality of switches) for allowing a host system and a remote system to communicate to a large number of other host systems and remote systems over one or more designated channels. A single channel may be sufficient but data transfer spread between adjacent ports can decrease latency and increase bandwidth. Therefore, separate channels for separate control flow and data flow may be desired. For example, one channel may be created for sending request and reply messages. A separate channel or set of channels may be created for moving data between the host system and any ones of target systems." (col.3, lines 49-67).

The reference further teaches "According to InfiniBand terminology, subnets are also referred to as "clusters", and clusters can contain one or more subnets. An InfiniBand compliant subnet requires at least one subnet manager that performs basic management services. In FIG. 6, the second host 604 is denoted as the subnet manager and contains the software that is responsible for initializing and monitoring the fabric. At a minimum the subnet manager 604 has to discover fabric topology, assign unique addresses to all channel adapter ports that are connected to the fabric, program switch forwarding tables and prepare all fabric connected agents so that they can communicate with other fabric agents. Particular implementations of the

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subnet manager 604 may include many other services that are required in a subnet.

Examples may include a partition manager that assigns partition keys to fabric agents; a name services to identify fabric agents; a path services that provides path information to fabric agents; and a device configuration manager that assigns fabric-attached I/O controllers to fabric hosts etc. (col.7, lines 24-42).

In response to applicant's argument that "This will allow the re-use of the same destination SDR resource set per multiple destination application instances particularly identified by the partition keys in the datagram.", the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Regarding claims 8, 9, 17 and 18,

a. Keeping in mind the teachings of the references Krause and Shah that are emphasized clearly above, the reference Shah teaches the separation of OS system kernel and the host channel adapter and its associated driver stack. (Fig. 5) This allows bypassing the kernel and, accessing the host channel adapter directly by the users or the consumer processes as the host channel adapter is provided to access the switched fabric directly. (col.5, lines 40-67). This is also affirmed by the applicant.

b. In response to applicant's argument that "This is no way address why it would be obvious to modify Krause and Shah such that a reliable datagram domain

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number is stored for kernel code and for user code.”, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Regarding claims 2-7, 11-16, 20 and 21,

a. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the definitions of reliable datagram domain, reliable datagram queue pair context, end-to-end context) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

b. Keeping in mind the teachings of the references Krause and Shah that are emphasized clearly above, the reference Murayama teaches the two-step process of processing of data packet containing the information on receiving region (domain) and a security key for protection. The reference teaches that the receiving side checks the key in the packet that has arrived and the key in the communication region and after the protection key checking is successful, the packet is transferred to a physical address according to the receive region assignment (Reliable datagram domain)((col.6, lines 22-67 and col.6, lines 1-13).

c. The reference Krause teaches the claimed elements of claim 5. (page 24, lines 19-25).

d. For claim 6, the reference Murayama teaches the two-step process of processing of data packet containing the information on receiving region (domain) and a security key for protection. The reference teaches determination a key that designates the access right to the communication region in the transmitting and receiving of data. Thus the outgoing packet is assigned with assigned receiving region and a security key where both of these components go through comparison process for their validity. ((col.6, lines 22-67 and col.6, lines 1-13).

e. For claim 7, keeping in mind the teachings of Krause as stated above, the reference also teaches the specific SDR associated with the specific AI or AIs. (Fig.4.) The reference also teaches that AI employing the reliable datagram serves can rely on the underlying communication services to correctly deliver the units of work or on error notification in the event of an unrecoverable error. (Page 6, lines 16-20). Thereby, the reference teaches that if the specific SDR has to be connected to a specific AI otherwise the transmitting packet will result in an error.

f. In response to applicant's argument that "Murayama does not teach or suggest comparing a partition key of an incoming packet with the partition key of an end-to-end context, comparing a reliable datagram domain of a queue pair with a reliable datagram domain of the end-to-end context if the partition keys match, or processing a data packet normally if the reliable datagram domain match.", the test for obviousness is not whether the features of a secondary reference may be bodily

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incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 8-10 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over International Pub No. WO 00/72159 (herein after Krause) and in view of Shah et al. (hereinafter Shah)(US 6, 694, 361).

Referring to claim 1,

The reference Krause teaches the reliable datagram services with an underlying end-to-end context of a channel adapter. (Fig.6.) The reference also teaches that the SDRs at the source and SDRs at the destination are created where specific application instances associated with specific SDRs. (storing Reliable datagram domain within reliable datagram and end-to-end context) (page 3, lines 5-15, Fig.4). The reference teaches the examples of protection violations including invalid protection keys, invalid access right request etc. (page 21, lines 30-31 and page 22 lines 1-4). The reference fails to teach the queue pairs and storing partition keys within end-to-end contexts. The reference Shah teaches the virtual interface which can contain work queues formed in

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pairs including a send queue and a receive queue which is located in channel adapters of any host systems. (col.3, lines 29-47, col.6, lines 22-43). The reference also teaches the subnet manager responsible for various functions at the channel adapter including assigning unique addresses to all channel adaptor ports. Also, the reference teaches partition manager as part of subnet manager assigning storing partition keys to the fabric agent (channel adapter ports)(col.7, lines 23-42) Therefore, it would have been obvious for one in ordinary skill in the art at the time the invention was made to modify Krause to include the teachings of Shah such that the each SDR is assured a reliable connection with the incoming datagram by a partition key assigned to the fabric agent (channel adapter ports). This will allow the re-use of the same destination SDR resource set per multiple destination application instances particularly identified by the partition keys in the datagram.

Referring to claims 8 and 9,

Keeping in mind of the teachings of Krause, the reference also teaches that the SDRs at the source and SDRs at the destination are created where specific application instances associated with specific SDRs. (storing Reliable datagram domain within reliable datagram and end-to-end context) (page 3, lines 5-15, Fig.4). It fails to teach storing reliable datagram domain numbers for kernel code and, user code and consumer processes wherein the kernel reliable datagram domain can only be used by kernel code. The reference Shah teaches the separation of OS system kernel and the host channel adapter and its associated driver stack. (Fig. 5) This allows bypassing the kernel and, accessing the host channel adapter directly by the users or the consumer

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processes as the host channel adapter is provided to access the switched fabric directly. (col.5, lines 40-67). Therefore, it would have been obvious for one in ordinary skill in the art at the time the invention was made to modify Krause to include the teachings of Shah such that the each SDR (Reliable datagram domain) is directly accessible by the user or the consumer processes by bypassing the operating system kernel process (kernel reliable datagram domain can only be used by kernel code.) The host-fabric adapter allows the host system to exchange data with one or more remote systems via the switched fabric, while preferably being compatible with many currently available operating systems as taught by Shah.

Referring to claim 10,

Claim 10 is a claim to a computer program product in a computer readable medium for use in a data processing system, which performs the steps of the method of claim 1. Therefore, claim 10 is rejected for the reasons set forth in claim 1.

Referring to claims 17 and 18,

Claims 17 and 18 are claims to a computer program product in a computer readable medium for use in a data processing system, which performs the steps of the methods of claims 8 and 9. Therefore, claims 17 and 18 are rejected for the reasons set forth in claims 8 and 9.

Referring to claim 19,

Claim 19 is a claim to a system that provides means for performing the steps of method of claim 1. Therefore, claim 19 is rejected for the reasons set forth in claim 1.

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5. Claims 2-7, 11-16, 20 and 21 rejected under 35 U.S.C. 103(a) as being unpatentable over International Pub No. WO 00/72159 (herein after Krause) and in view of Shah et al. (hereinafter Shah)(US 6, 694, 361) as applied to claim 1 above, and further in view of Murayama et al. (hereinafter Murayama)(US 5, 617, 424).

Referring to claim 2,

Keeping in mind the teachings of Krause and Shah as indicated above, both references fail to teach prohibiting consumer process directly accessing the reliable datagram domain. The reference Murayama teaches the method of communication between network computers by diving packet data into parts for transfer to respective regions. (Abstract). The reference also teaches the receiving side checks the key in the packet that has arrived and the key in the communication region. Thereby the reference teaches that the consumer process cannot directly access the reliable datagram domain without protection being checked by comparing the key. (col.5, lines 23-67 and col.6, lines 1-13). Therefore, it would have been obvious for one in ordinary skill in the art at the time the invention was made to modify Krause by including the teachings of Shah such that the each SDR is assured a reliable connection with the incoming datagram by a partition key assigned to the fabric agent (channel adapter ports) and the teachings of Murayama where the keys are compared as shown for security protection. . This will allow a direct transfer of received packets to the region of receiving processor and eliminate the data copy processing as taught by Murayama.

Referring to claims 3 and 4,

Keeping in mind the teachings of Krause and Shah as indicated above, the reference additionally teaches of infiniband subnet (Fig.6) where the datagrams are normally processed as they received according to Infiniband partitioning semantics. (col.6, lines 59-67 and col.7, lines 1-58). However, both of these references fail to teach the processing step of comparing the keys and other control data such as specific SDRs (Reliable datagram domain) of incoming messages. The reference Murayama teaches the two-step process of processing of data packet containing the information on receiving region (domain) and a security key for protection. The reference teaches that the receiving side checks the key in the packet that has arrived and the key in the communication region and after the protection key checking is successful, the packet is transferred to a physical address according to the receive region assignment (Reliable datagram domain)((col.6, lines 22-67 and col.6, lines 1-13). Therefore, it would have been obvious for one in ordinary skill in the art at the time the invention was made to modify Krause by including the teachings of Shah such that the each SDR is assured a reliable connection with the incoming datagram by a partition key assigned to the fabric agent (channel adapter ports) and the teachings of Murayama where first the keys are compared, if successful, and then the receive region is compared per SDR of Krause as shown for security protection. . This will allow a direct transfer of received packets to the region of receiving processor and eliminate the data copy processing as taught by Murayama.

Referring to claim 5,

The reference Krause teaches the claimed elements. (page 24, lines 19-25).

Referring to claim 6,

Keeping in mind the teachings of Krause and Shah as indicated above, both of these reference fails to teach the processing step of comparing the keys and other control data such as specific SDRs (Reliable datagram domain) outgoing messages. The reference Murayama teaches the two-step process of processing of data packet containing the information on receiving region (domain) and a security key for protection. The reference teaches determination a key that designates the access right to the communication region in the transmitting and receiving of data. Thus the outgoing packet is assigned with assigned receiving region and a security key where both of these components go through comparison process for their validity. ((col.6, lines 22-67 and col.6, lines 1-13). Therefore, it would have been obvious for one in ordinary skill in the art at the time the invention was made to modify Krause by including the teachings of Shah such that the each SDR is assured a reliable connection with the incoming datagram by a partition key assigned to the fabric agent (channel adapter ports) and the teachings of Murayama where first the receiving region (domain) is compared, if successful, and then the security key is compared per SDR of Krause as shown for security protection. This will allow a direct transfer of received packets to the region of receiving processor and eliminate the data copy processing as taught by Murayama.

Referring to claim 7,

Keeping in mind the teachings of Krause as stated above, the reference also teaches the specific SDR associated with the specific AI or AIs. (Fig.4.) The reference also

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teaches that AI employing the reliable datagram serves can rely on the underlying communication services to correctly deliver the units of work or on error notification in the event of an unrecoverable error. (Page 6, lines 16-20). Thereby, the reference teaches that if the specific SDR has to be connected to a specific AI otherwise the transmitting packet will result in an error.

Referring to claim 11,

Claim 11 is a claim to a computer program product in a computer readable medium for use in a data processing system, which performs the steps of the method of claim 2. Therefore, claim 11 is rejected for the reasons set forth in claim 2.

Referring to claims 12 and 13,

Claims 12 and 13 are claims to a computer program product in a computer readable medium for use in a data processing system, which performs the steps of the methods of claims 3 and 4. Therefore, claims 12 and 13 are rejected for the reasons set forth in claims 3 and 4.

Referring to claim 14,

Claim 14 is a claim to a computer program product in a computer readable medium for use in a data processing system, which performs the steps of the method of claim 5. Therefore, claim 14 is rejected for the reasons set forth in claim 5.

Referring to claim 15,

Claim 15 is a claim to a computer program product in a computer readable medium for use in a data processing system, which performs the steps of the method of claim 6. Therefore, claim 15 is rejected for the reasons set forth in claim 6.

Referring to claim 16,

Claim 16 is a claim to a computer program product in a computer readable medium for use in a data processing system, which performs the steps of the method of claim 7. Therefore, claim 15 is rejected for the reasons set forth in claim 7.

Referring to claim 20,

Claim 20 is a claim to a system that provides means for performing the steps of method of claim 3. Therefore, claim 20 is rejected for the reasons set forth in claims 3 and 4.

Referring to claim 21,

Claim 21 is a claim to a system that provides means for performing the steps of method of claim 6. Therefore, claim 21 is rejected for the reasons set forth in claim 6.

Conclusion

6. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

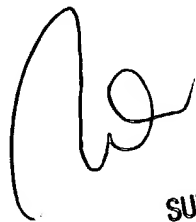
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ashok B. Patel whose telephone number is (703) 305-2655. The examiner can normally be reached on 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John A Follansbee can be reached on (703) 305-8498. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Abp



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